THE LIFE HISTORIES OF *PASMA TASMANICA* (MISKIN) AND *TOXIDIA RIETMANNI* (SEMPER) (HESPERIIDAE: TRAPEZITINAE)

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Abstract

The early stages of *Pasma tasmanica* (Miskin) and *Toxidia rietmanni rietmanni* (Semper) are described and illustrated.

Introduction

The trapezitine skippers *Pasma tasmanica* (Miskin) and *Toxidia rietmanni* (Semper) are confined to coastal and near coastal forests of eastern Australia. *P. tasmanica* is essentially a montane and subalpine species, and is distributed from northern New South Wales along the Great Dividing Range to western Victoria. It also occurs in montane and coastal Tasmania. Two subspecies of *T. rietmanni* are recognised. The nominal subspecies is distributed from central Queensland to southern New South Wales. Subspecies *parasema* (Lower) is found in the tablelands of northern Queensland. *T. rietmanni rietmanni* frequents rainforests and coastal wet-sclerophyll forests. The adults of both species fly throughout the warmer months of the year, but are more frequently found in spring and autumn. They are generally uncommon species but in some areas they are locally abundant. Their life histories were previously unknown.

Life History

Pasma tasmanica (Miskin), 1889

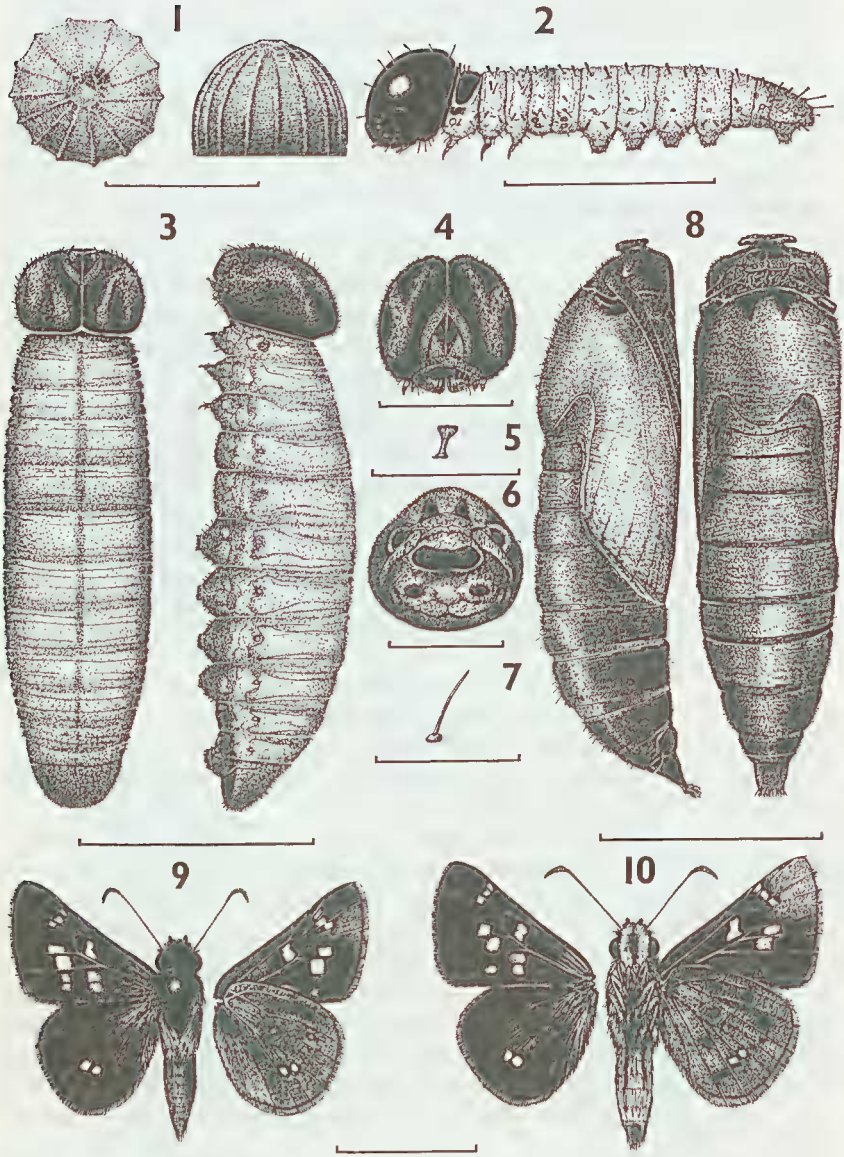
(Figs 1-10)

Foodplant. Unidentified [larvae in captivity feed on a wide range of soft grasses, including *Poa* sp. (Family Poaceae)].

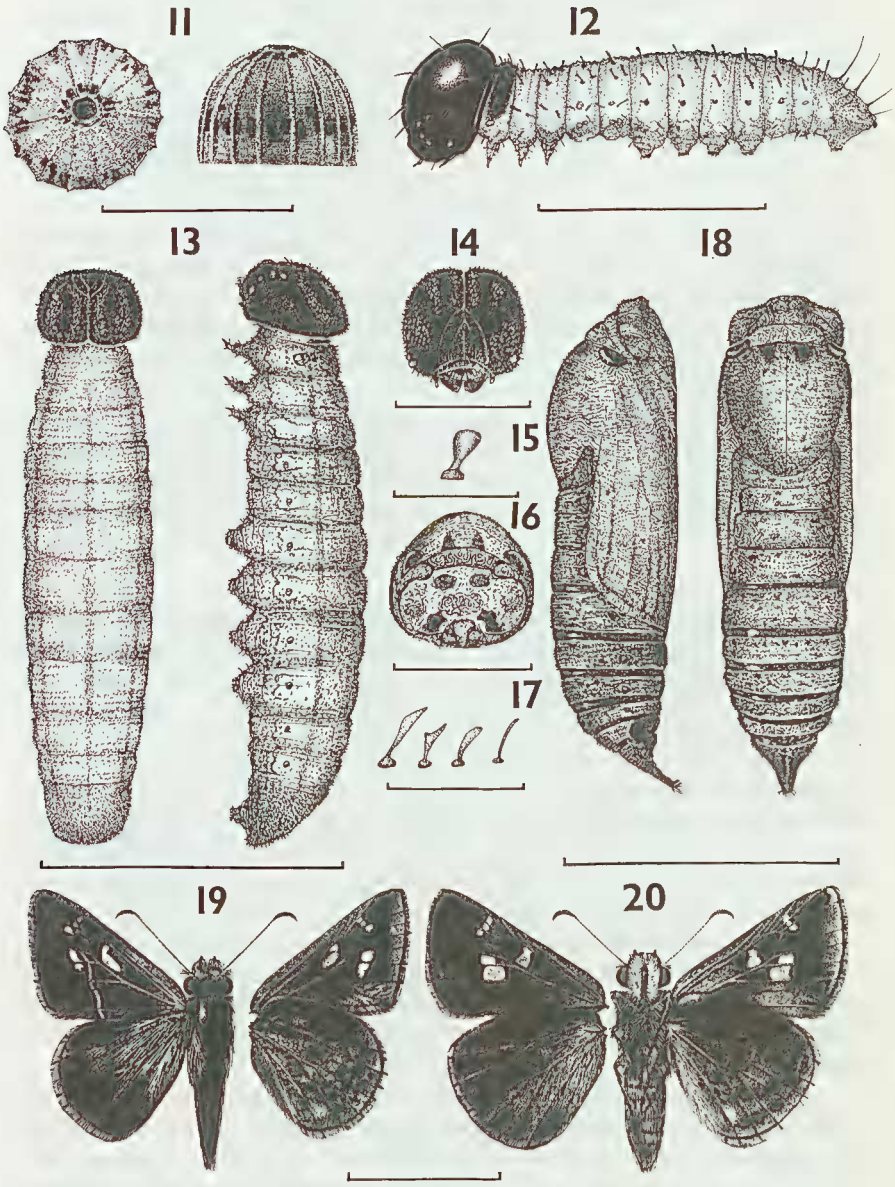
Egg (Fig. 1). Diameter 1 mm, dome-shaped, pale green when first laid, changing in 2 days to cream-coloured with an orange spot near the micropyle; 14 vertical ribs, some broken or converging at the apex.

Larva (Figs 2-7). 1st instar (Fig. 2): length 2 mm; head shining black, covered sparsely with blunt-ended to slightly clubbed setae; prothoracic plate black; body pale cream coloured, covered with short clubbed setae, slightly longer on anal segments. 2nd-5th instars (5th instar Figs 3-5): head dark brown with paired light brown markings on dorsal, lateral and frons surfaces; body reddish brown, lighter brown to green between the segments with a dark brown to black dorsal line; body setae pale, semi-transparent, short and clubbed (Fig. 5).

Pupa (Figs 6-8). Length 16 mm; brown, spiracles black, paired dorsal markings on anterior of thorax dark brown, covered (particularly on anterior surface) with a bluish grey waxy 'bloom', short pale-coloured setae sparsely covering body; pupal cap with a black, laterally-spread, bifid projection, and two ventrally placed black markings.



Figs 1-10. *Pasma tasmanica*: (1) dorsal and lateral view of egg; (2) 1st instar larva; (3) dorsal and lateral view of final instar larva; (4) frons of final instar larval head; (5) larval setae; (6) frons of pupa; (7) pupal setae; (8) lateral and dorsal view of pupa; (9) adult male, upperside left and underside right; (10) adult female, upperside left and underside right. Scale lines: Figs 1, 2 = 1 mm; 3, 8 = 5mm; 4, 6 = 3 mm; 5, 7 = 0.5 mm; 9, 10 = 10 mm.



Figs 11-20. *Toxidia rietmanni rietmanni*: (11) dorsal and lateral view of egg; (12) 1st instar larva; (13) dorsal and lateral view of final instar larva; (14) frons of final instar larval head; (15) larval setae; (16) frons of pupa; (17) pupal setae; (18) lateral and dorsal view of pupa; (19) adult male, upperside left and underside right; (20) adult female, upperside left and underside right. Scale lines: Figs 11, 12 = 1 mm; 13, 18-20 = 10 mm; 14, 16 = 5 mm; 15, 17 = 0.5 mm.

Toxidia rietmanni rietmanni (Semper), 1879
(Figs 11-20)

Foodplant. An unidentified species of soft grass (Family Poaceae).

Egg (Fig. 11). Diameter 0.9 mm, dome-shaped, off-white to pale green, later developing a red-brown micropyle and lateral band; 13-15 vertical ribs.

Larva (Figs 12-15). 1st instar (Fig. 12): length 2.5 mm; head shiny black, pale setae covering dorsal, frons and lateral areas; prothoracic plate brown-black, edged red; body pale yellow, covered with setae, longer on posterior segments. 2nd-5th instars (5th instar Figs 13-15): head dark brown with light brown mottling, sparsely covered with pale setae; body pale reddish grey to pale brown with grey-green to pink between the segments, darker mottling producing indistinct dorsal and dorso-lateral lines; body setae short, pale and clubbed (Fig. 15).

Pupa (Figs 16-18). Length 15 mm; red-brown, spiracles black, paired dorsal markings on anterior of thorax and on posterior segments and cremaster black to dark brown, body lightly covered with simple setae; pupal cap sclerotized with two dorsal and one central, slightly raised areas covered with setae.

Notes

Field observations of *Pasma tasmanica* were made in Tasmania, Victoria, the Australian Capital Territory and southern and central New South Wales (specimens were reared from Honeysuckle Creek, A.C.T.). Life history data of *Toxidia rietmanni* were obtained from observations of home-reared specimens collected at Seal Rocks, central New South Wales, and field records made in southern New South Wales and central Queensland. Eggs of both species were obtained by caging females in net-covered pots containing a variety of grasses. The eggs were mostly laid on grass stems and leaf-blades or litter and hatched from 10-15 days. The young larvae made loosely spun shelters in the leaf-blades; the older larvae made tube-shaped shelters within grass blades (*T. rietmanni*), grass stems (*P. tasmanica*), or simply within tightly woven debris at the base of the grass. Pupation generally occured in the latter shelters. Eggs obtained from *P. tasmanica* in November and from *T. rietmanni* in January produced adults in March and October, respectively. This indicates that both species are at least bivoltine, especially at low altitudes.

Pasma tasmanica is found locally near spagnum bogs and button-grass plains in sub-alpine areas of the mainland and Tasmania. It also occurs along tussock-sedge watercourses and stream banks at sea level in southern New South Wales and Victoria. Both sexes of this skipper fly in bright sunshine, visiting small flowering herbs. Males establish 'territories', resting on shrubs and tussocks growing near water and in swales. Females are even more solitary in their habits, flying low near streams and marshes inspecting grass tussocks

or occasionally fluttering across sunny meadows. Ovipositing, however, was not observed in the field. Females were often seen in areas heavily grazed by wombats, kangaroos and wallabies in which only large *Poa* tussocks remained. The search behaviour of 'wild' females, indescriminate oviposition sites of caged females, and a larval preference for soft, bladed grasses, indicate that the larvae of this skipper may be opportunistic, feeding on any soft grass growing within the protective environment of large *Poa* tussocks and other dense herbage.

Toxidia rietmanni is generally found on the fringes of rainforest, both at sea-level and in the coastal mountains. The adults of both sexes rest in sunshine on the leaves of shrubs and trees, often 2-3 m above the ground. They frequently visit flowers, such as *Lantana*, in the morning and late afternoon. Males have distinctive flight paths and resting sites. At Seal Rocks females were observed ovipositing on a common species of soft grass growing in the small, sunny clearing of a vine-forest. The eggs were deposited singly beneath leaf blades, on grass stems or nearby debris. In coastal localities there are probably at least three generations each year.

The morphology of juveniles and adult *Pasma tasmanica* and *Toxidia rietmanni* clearly place both species in the Trapezitine subsections of the Trapezitinae (see Waterhouse, 1932; Atkins, 1973).

Acknowledgements

I am grateful to Dr Don McNiel, California, for his field assistance in locating females of *Pasma tasmanica* at Honeysuckle Creek in areas made somewhat hazardous by the presence of several elapid snakes belonging to three species.

References

Atkins, A. F., 1973. A new genus *Proeidosa* for an Australian skipper *Pasma polysema* (Lower) (Lepidoptera: Hesperiidae, Trapezitinae). *J. Aust. ent. Soc.* 12(4): 253-260, text-figs 1-26.

Waterhouse, G. A., 1932. *What butterfly is that?* Angus and Robertson, Sydney, 291 pp.